FINAL PROTOCOL FOR THE TRANSPLANT AND REESTABLISHMENT OF BEAVERS INTO SELECTED LOCATIONS IN UTAH DIVISION OF WILDLIFE RESOURCES' SOUTHERN REGION

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Beavers (*Castor canadensis*) are well distributed throughout most of North America (Novak 1987). In Utah, beavers have been found in all regions except the deserts of the Great Basin (Durrant 1952). This species seems to be limited only by the distribution of water and food, and can subsist in locations of poor food supply as long as the water supply is adequate. Beavers figured prominently in the original exploration of this continent by Europeans (Lancia and Hodgdon 1984). Demand for beaver pelts and other furs lead trappers far afield as early as the 1600's. By 1900, centuries of trapping and habitat exploitation had decimated beaver populations. In the past century, however, decreased demand for animal fur, regulation of harvest, improved land management practices and reintroduction efforts by various resource management agencies have allowed beavers to repopulate most of their historic range. Beavers are now so abundant in some areas that they are considered a nuisance.

There is not another wild animal in North America which has as dramatic an impact on its environment, and the environment in general, as the beaver (Novak 1987). Beavers are best known for their dam building, which can alter stream flow patterns and cause localized flooding. Dam building is this species' method of assuring the availability of adequate habitat and allowing for expansion into unoccupied areas. Beavers prefer slack water habitats such as ponds, small lakes and slow flowing, meandering streams (Novak 1987). If they cannot find these conditions they will readily construct dams to create them or enhance what already exists. Beaver dams pond water and create stable habitats secure from predation and which improve food conditions (Lancia and Hodgdon 1984). If natural water sources are not available beavers will colonize irrigation ditches, farm ponds and reservoirs; which brings them into conflict with man.

The damming of streams by beavers can have a significant impact on natural functions therein. Immediate impacts of beaver dams include decreased erosion and sedimentation and increased water table levels (West and Rasmussen 1947, Naiman *et al* 1986). Stream flows may be decreased initially, but are likely to become more consistent and dependable over time. Beaver activity in cold water streams can lead to improved conditions for trout populations by providing pooled resting areas and increased invertebrate forage base. However, beaver activity on marginal trout streams can have a detrimental impact on trout (Novak 1987). Although initial flooding will drown out trees in forested situations, the openings created tend to be small and exhibit increased diversity of plants and animals. Numerous game and non-game species of wildlife are attracted to and benefit from beaver altered habitats, including: deer, elk, moose, grouse, waterfowl, turkeys, furbearers and many species of non-game birds and mammals (West and Rasmussen 1947, Hair *et al* 1979, Novak 1987). Ives (1942) showed that beavers were essential to the development and maintenance of wet meadow complexes in high elevation valleys of Colorado. In some places, beaver meadows are used for livestock grazing and may be harvested for native hay (Novak 1987). However, Skinner *et al* (1984) found that beaver ponds associated with cattle ranches had high levels of fecal bacteria. Recent studies in Wyoming have shown that beavers can successfully restore severely damaged riparian areas in both mountainous and desert regions (Apple 1985). In general, streams inhabited and dammed by beaver are more resistant to perturbation and return to base condition more rapidly following disturbance events than streams without a resident beaver population (Naiman *et al* 1986).

Beavers have had a great economic impact since the settling of North America by Europeans. As previously stated, demand for beaver pelts played a major role in continental

exploration. Initially, beavers had a positive economic impact through the commercialization and sale of pelts. Since the early 1900's, however, the economic impact of beavers has been largely negative (Novak 1987). Pelt prices have been variable, but the low cost and ready supply of synthetic furs, coupled with public sympathy against fur harvest, have depressed most fur prices. Beaver pelts have brought $31,000 into Utah annually since 1957; or approximately $1.3 million over that 42 year period. In spite of these impressive figures, it is estimated that money lost as a result of beaver damage outstrips economic gains from pelts (Novak 1987). Beavers cause damage to trees, crops, dams/dikes, irrigation ditches and canals, railroad and road embankments, bridges/culverts, etc. These attributes bring beavers into conflict with people. However, many aspects of beaver behavior are beneficial. Woodward *et al* (1976) found that 24% of landowners with beaver ponds on their property felt they were beneficial.

In 1899 the Utah legislature passed a law prohibiting the shooting of beaver because they were so rare in the state (Rawley 1982). After many years of protection, however, beavers had become a nuisance in some areas. In 1915, the Utah legislature provided for trapping of wild beavers for fur farming and to control property damage. Several other laws followed which provided for trapping, moving and otherwise controlling nuisance beavers. Between 1942 and 1944, 264 beavers were transplanted in Utah (Rawley 1982). The first trapping season regulations for beavers appeared in 1957, but control of nuisance beavers was still allowed.

Although beaver transplants have not proliferated in Utah Division of Wildlife Resources' (Division) Southern Region, some transplants have occurred in the 1990s. At least 11 nuisance beavers were moved onto Division properties at Indian Peaks, Iron County between 1995 and 1998. In 1993, Fishlake National Forest requested that beavers be transplanted into the

Solomon Basin and Elkhorn areas, Wayne County and US Bureau of Land Management requested that beavers be moved from Calf Creek to Varney Creek, Garfield County. Most recently, the Division has moved nuisance beavers from Washington County into Anderson Creek Canyon in the Pine Valley Mountains Wilderness Area under a 1995 agreement with the Five County Association of Governments.

PROBLEM

Beaver recolonization of historic habitats in Utah has brought beavers into conflict with humans. Human populations in Utah continue to increase and expand into, or require resources from, preferred beaver habitats. Specifically, increased population growth leads to higher demand for water, a precious resource in the nation's second driest state. Because of these conditions, beavers are often considered an impediment by agricultural and municipal communities. Resentment of beavers stems from their habitat alteration activities. Water users view beaver dams/ponds as water sinks which deplete the available water supply. In addition, beaver construction activities do cause damage to water transport canals/ditches and control structures through tunneling and flooding. Beaver dams can flood croplands and beavers may also feed on crops and girdle or fell trees. The series of state laws specific to beaver management passed as early as 1915 illustrate that these conflicts began to express themselves in some locations almost 100 years ago (Rawley 1982). The Division has dealt with beaver problems in several ways: by establishing harvest seasons and regulations, by issuing damage control permits to landowners allowing them to harvest offending animals, and by direct removal and or/relocation of beavers and their dams/lodges.

Although beaver problems do exist in certain locations throughout Utah, there are still places where reestablishment of beavers is feasible and desirable. Reintroducing beavers to these vacant habitats will restore a key ingredient to these ecosystems and should promote the health of riparian systems, as seen in Wyoming and other states (Apple 1985). As stated by Naiman *et al* (1986), riparian systems maintained by beavers tend to be more stable and less susceptible to perturbation. Beaver ponds slow erosion and sediment discharge by streams (Novak 1987), raise the water table, increase habitat variability and forage availability, can increase wildlife use and abundance in specific areas, and can improve habitat for trout fisheries (Ives 1942, West and Rasmussen 1947, Hair *et al* 1979, Novak 1987). Healthy, naturally functioning ecosystems improve natural resource conditions and the benefits derived from them. In addition, beavers are a renewable resource which provides recreational opportunities, annual income from pelt sales of approximately $31,000, and an unknown trickle-down economic benefit to businesses and communities.

PROPOSAL

The mission of Utah Division of Wildlife Resources is to "assure the future of protected wildlife for its intrinsic, scientific, educational and recreational values through protection, propagation, management, conservation and distribution throughout the State". The Division's goals include: "conserve, protect, enhance and manage Utah's ecosystems", "enhance wildlife recreational experiences consistent with other DWR goals" and "provide a broad base of economic benefits from wildlife consistent with other DWR goals" (Utah Division of Wildlife Resources 2000). It is because of transplant/reintroduction programs established to accomplish

these goals that antelope, deer, elk, bison, wild turkey, and numerous other species now populate areas of Utah where they were once scarce or extirpated. Reestablishing beavers in historic habitats will meet many of the objectives and goals stated in the Division's Strategic Plan (Utah Division of Wildlife Resources 2000). Nuisance beavers provide a resource and opportunity for accomplishing reintroductions and ecosystem enhancement. These animals, which would otherwise be destroyed, can be better used to accomplish the goals listed above.

Transplants of wildlife can be difficult and controversial. There are recognized negative economic and political impacts associated with beavers (Novak 1987). However, these detrimental effects can be minimized through adequate management and careful selection of transplant sites (West and Rasmussen 1947, Hair *et al* 1979). In Utah, transplants of wild animals are regulated by Title 23 Utah Code Annotated. This legislation, passed in 1998, outlines the procedures which must be followed before any wild animals may be transplanted from one location in Utah to another. Briefly, transplants must be based on a previously approved transplant or species management plan which specifically defines acceptable transplant sites. Transplant plans must be coordinated with landowners, local governments, land management agencies and the Resource Development Coordinating Committee. Final approval must be obtained from the Regional Advisory Councils and the Wildlife Board.

The Division proposes to transplant nuisance beavers from problem areas of the Southern Region into suitable stream habitats elsewhere in the Southern Region as described in the Transplant Protocol which follows. Approval of an established beaver transplant protocol will provide the Division flexibility in its beaver management and control programs. The Division does not intend to begin wholesale transplanting of beavers across its Southern Region.

Rather, the Division recognizes that the presence of beavers in a watershed can benefit the overall health of the system. Some vacant habitats still exist in the Southern Region and can act as transplant areas for beavers which would otherwise have to be euthanized. With an approved protocol in place, the Division will be able to respond to beaver transplant opportunities as soon as they arise. It is anticipated that this plan will be in effect for at least 10 years.

TRANSPLANT PROTOCOL

Beaver transplants within the Division's Southern Region will be accomplished through the following guidelines.

1) Relocated animals will come only from the within the Division's Southern Region and will be transplanted only to sites on the approved transplant list.
2) Beavers that are to be transplanted into reintroduction sites will be live trapped by Division personnel or Division authorized cooperators (*e.g.* USDA/APHIS Wildlife Services) as nuisance animals. No efforts will be made to translocate non-nuisance beavers simply to fill vacant habitat. No other persons will be authorized to transplant beavers in the Division's Southern Region.
3) Beavers will be transplanted to sites within the county of original capture, unless conditions provide otherwise. Beavers may be moved into adjoining counties if there are not enough locations available in the county of capture or if there are few beavers available in the county to which beavers will be moved.
4) The Division's Southern Region Management Team will designate approved release sites (selected from the attached list) in each county on an annual basis.

These sites will be selected in coordination with cooperating land management agencies or private landowners. Releases will not occur outside these locations without prior approval and coordination by the Management Team and cooperators. Opportunities to relocate beaver to private lands will be reviewed by the Management Team on a case-by-case basis.

5) Transplants will continue at selected sites until a beaver density of one (1) family group per kilometer of stream is achieved or until evidence exists showing that beavers transplanted to any specific location have adversely impacted stream habitats, roads, irrigation systems, etc.

6) The Division will provide each county, land management agency and, if applicable, affected private landowners in its Southern Region with annual beaver trapping and transplant reports which will document: numbers of beaver trapped and moved, locations whence beaver were trapped, locations to which beavers were transplanted and results of transplant activities at each transplant site.

7) Additions or changes to these guidelines may be sought if future conditions warrant. Any amendments to this protocol will be accomplished as regulated under Title 23 Utah Code Annotated.

POTENTIAL BEAVER TRANSPLANT SITES

The following potential transplant sites were compiled by the Division after contacting US Forest Service, US Bureau of Land Management and from knowledge and expertise of Division field personnel. Sites where conflicts were expected to occur due to proximity of roads, reservoirs, irrigation canals, fisheries, etc. were avoided when compiling this list (West and Rasmussen 1947). Because the Division did not receive responses from all the persons and agencies from which it requested input, this list may not represent all suitable transplant sites. The Division anticipates that sites will be both added to and removed from this list, or priorities readjusted, as resources management issues arise or change in the future. Such changes will not be enacted unilaterally by the Division, but in conjunction with, or at the behest of cooperators. Significant changes to policy or protocol outlined herein will follow regulations described in Title 23 Utah Code Annotated.

POTENTIAL BEAVER TRANSPLANT SITES IN THE DIVISION OF WILDLIFE RESOURCES' SOUTHERN REGION

COUNTY	WATER	LANDOWNER	TOWNSHIP	RANGE
PRIVATE PROPERTIES				
All	Private landowners periodically request beavers from the Division. The opportunity to transplant beavers to suitable private lands will be kept open. Transplants of beavers to private lands will depend upon the proximity of existing beaver populations, the proximity to other landowners, concerns of neighboring landowners and the possibility that transplanted beavers will become a nuisance to the landowner and their neighbors.			
FEDERAL & STATE PROPERTIES				
Beaver	Birch Creek[a]	Fishlake National Forest	30S	5W & 6W
	Duncan Creek[b]	Fishlake National Forest	28S	5W
	Hunt Creek	Fishlake National Forest	29S	4W & 5W
	Iant Creek, headwaters	Fishlake National Forest/SITLA	28S & 29S	5W
	Indian Peak WMA[c]	UDWR	29S	18W
	Lousy Jim Creek, headwaters	Fishlake National Forest	29S	5W
	Pine Creek	Fishlake National Forest	27S	6W
	Wilson Creek	Fishlake National Forest	29S	5W & 6W
Garfield	Bull Rush Creek	Dixie National Forest	32S	4½W
	Chokecherry Creek	Dixie National Forest	30½S	5E & 6E

COUNTY	WATER	LANDOWNER	TOWNSHIP	RANGE
Garfield	Cottonwood Creek	Dixie National Forest	33S	3W & 4W
	Deer Creek[d]	Dixie National Forest/BLM	32S & 33S	5E
	Hunt Creek, East & West	Dixie National Forest	34S	3W & 4W
	Lost Creek	Dixie National Forest	32S	4W
	Mountain Springs Fork	Dixie National Forest	32S	3W & 4W
	Sandy Creek[a]	Dixie National Forest	34S	6W
	Sanford Creek, Left Fork[a]	Dixie National Forest	33S	4.5W
	Sevier River, East Fork @ Dave's Hollow	Dixie National Forest	36S	3W
	Smith Canyon	Dixie National Forest	32S	4W
	Sweetwater Creek	Dixie National Forest	34S	1W
	Varney-Griffin Creek	Dixie National Forest/BLM	33S 34S & 35S	1E 2E
Iron	Bear Creek	Cedar District - BLM / Dixie NF	32S & 33S	6W & 7W
	Sandy Creek[a]	Dixie National Forest	33S	6W
Kane	Sevier River, East Fork above Crawford Creek	Dixie National Forest	38S & 39S	4½W & 5W

COUNTY	WATER	LANDOWNER	TOWNSHIP	RANGE
Millard	Cherry Creek	Fishlake National Forest	23S	4W
	Corn Creek, headwaters	Fishlake National Forest	23S	4W
	Pioneer Creek	Fishlake National Forest	21S	3W
Piute	City Creek	Fishlake National Forest/UDWR	29S	4W
	Fish Creek, headwaters[b]	Fishlake National Forest	27S	5W
	Shingle Creek	Fishlake National Forest	26S & 27S	5W & 6W
	Box Creek, headwaters[b]	Fishlake National Forest	27S	2W
Sevier	Eagle Flat (Monroe Creek)	Fishlake National Forest	26S	2W
	Jump Creek	Fishlake National Forest	20S & 21S	3E
	Last Chance Creek (North and South)	Fishlake National Forest	25S	4E
	North Creek	Fishlake National Forest	24S	3E & 4E
	Pine Creek	Fishlake National Forest	21S	3E
	Shingle Creek	Fishlake National Forest	25S & 26S	5W
	Skumpah Creek	Fishlake National Forest	21S	4E
	Willow Creek	Fishlake National Forest	20S & 21S	2E & 3E

COUNTY	WATER	LANDOWNER	TOWNSHIP	RANGE
Washington	Anderson Valley[c]	Dixie National Forest	38S & 39S	13W & 14W
	Lost Creek	Dixie National Forest	38S	18W
	Pine Creek	Dixie National Forest	37S & 38S	18W & 19W
	Pine Park Spring (outside of campground)	Dixie National Forest	37S	19W
	Rattlesnake Creek	Dixie National Forest	38S	18W
Wayne	Chokecherry Creek	Dixie National Forest	30 S	5E & 6E
	Elk Horn Guard Station	Fishlake National Forest	27S	4E

[a] Bonneville cutthroat trout (*Oncorhynchus clarki utah*), a conservation species, may be present or stream holds potential for reestablishment of this species

[b] habitat conditions may not currently be suitable, but stream holds potential for future transplants

[c] currently authorized for beaver transplants under other agreements

[d] Ute ladies'- tresses (*Spiranthes diluvialis*), a T&E listed plant, may be present

Figure 1. Map of permanent and intermittent drainages of Beaver County, UT showing those drainages (highlighted) proposed to receive beaver transplants under *A Proposal for the Transplant and Reestablishment of Beavers into Selected Locations in Utah Division of Wildlife Resources' Southern Region.*

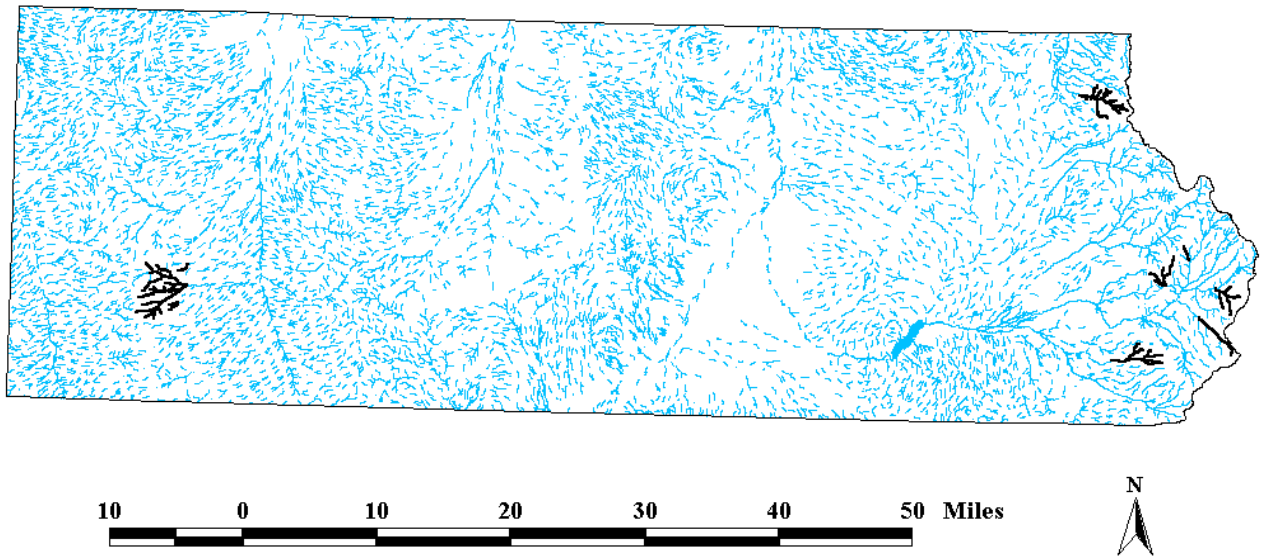


Figure 2. Map of permanent and intermittent drainages of Garfield County, UT showing those drainages (highlighted) proposed to receive beaver transplants under *A Proposal for the Transplant and Reestablishment of Beavers into Selected Locations in Utah Division of Wildlife Resources' Southern Region.*

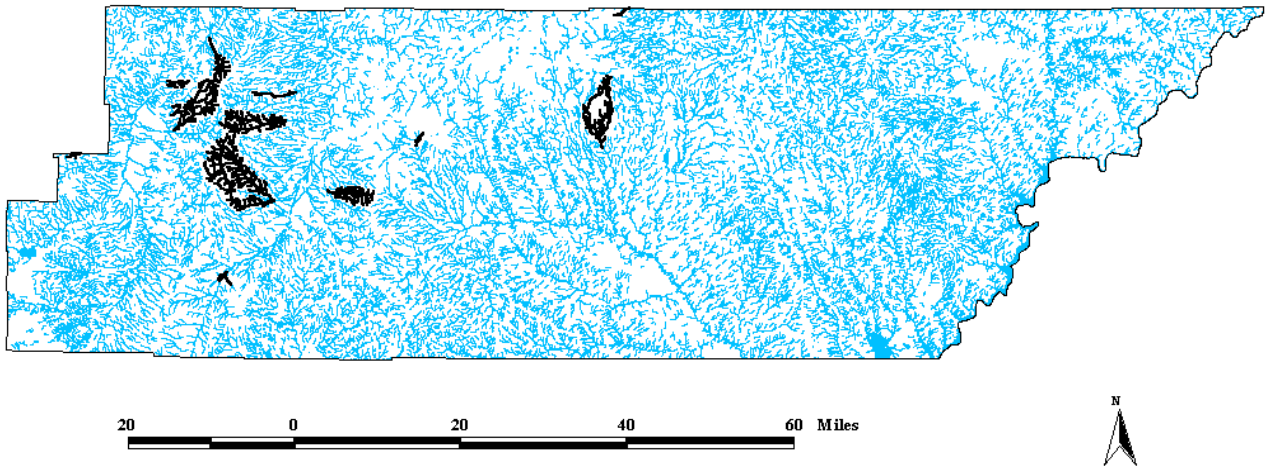


Figure 3. Map of permanent and intermittent drainages of Iron County, UT showing those drainages (highlighted) proposed to receive beaver transplants under *A Proposal for the Transplant and Reestablishment of Beavers into Selected Locations in Utah Division of Wildlife Resources' Southern Region*.

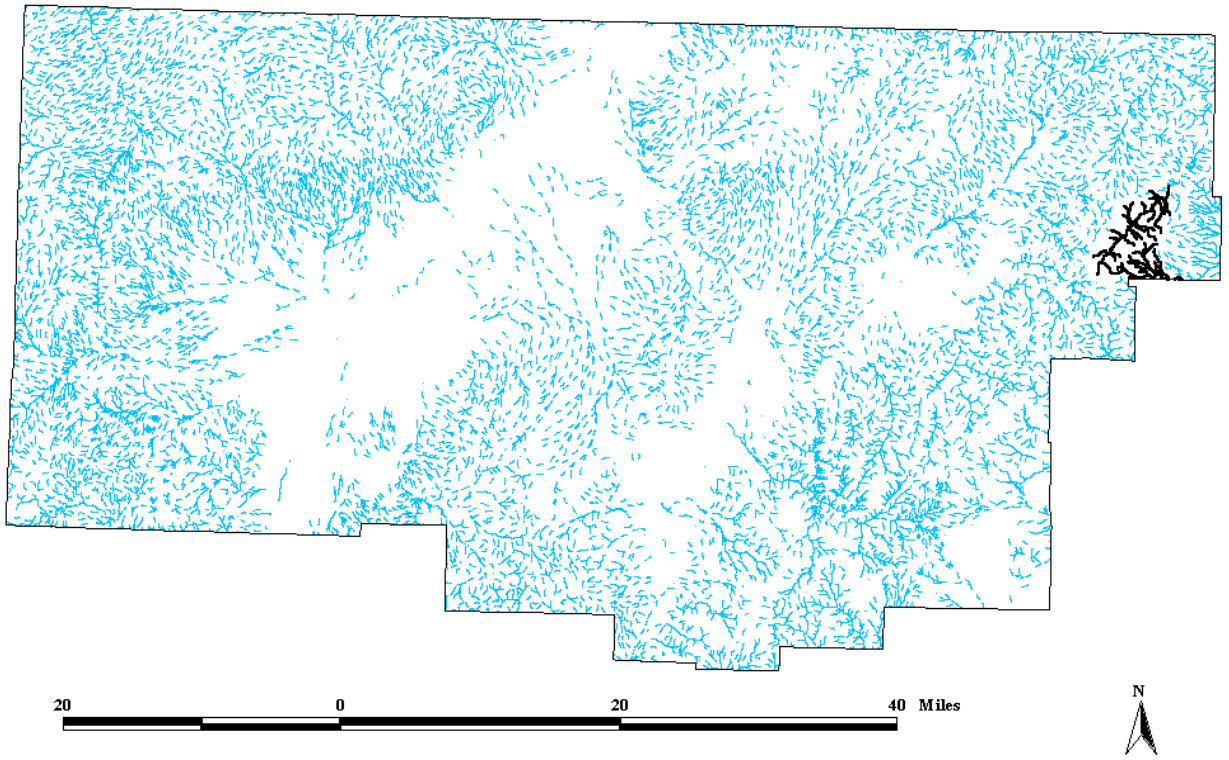


Figure 4. Map of permanent and intermittent drainages of Kane County, UT showing those drainages (highlighted) proposed to receive beaver transplants under *A Proposal for the Transplant and Reestablishment of Beavers into Selected Locations in Utah Division of Wildlife Resources' Southern Region.*

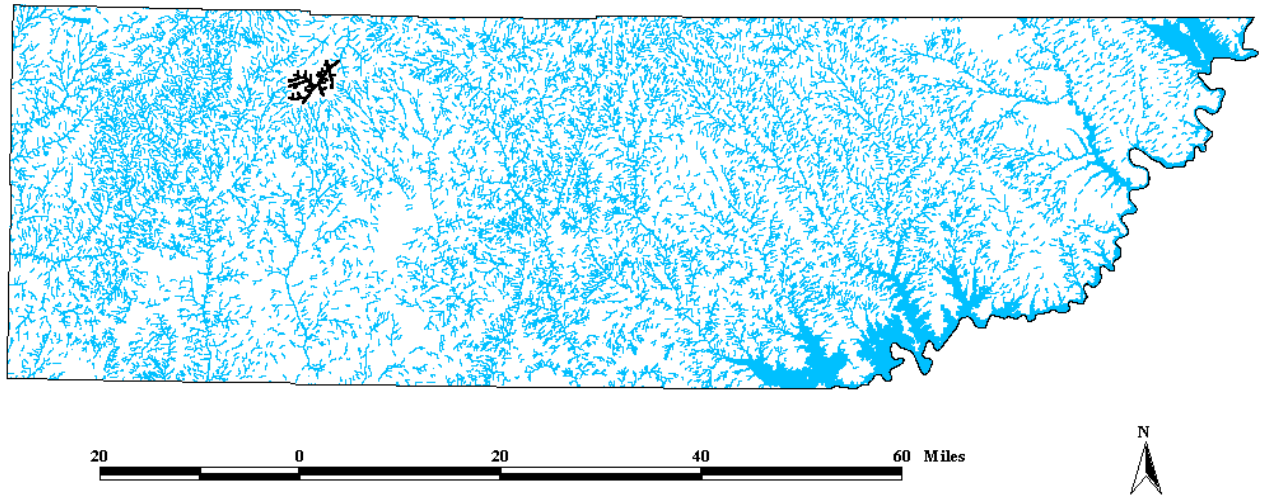


Figure 5. Map of permanent and intermittent drainages of Millard County, UT showing those drainages (highlighted) proposed to receive beaver transplants under *A Proposal for the Transplant and Reestablishment of Beavers into Selected Locations in Utah Division of Wildlife Resources' Southern Region.*

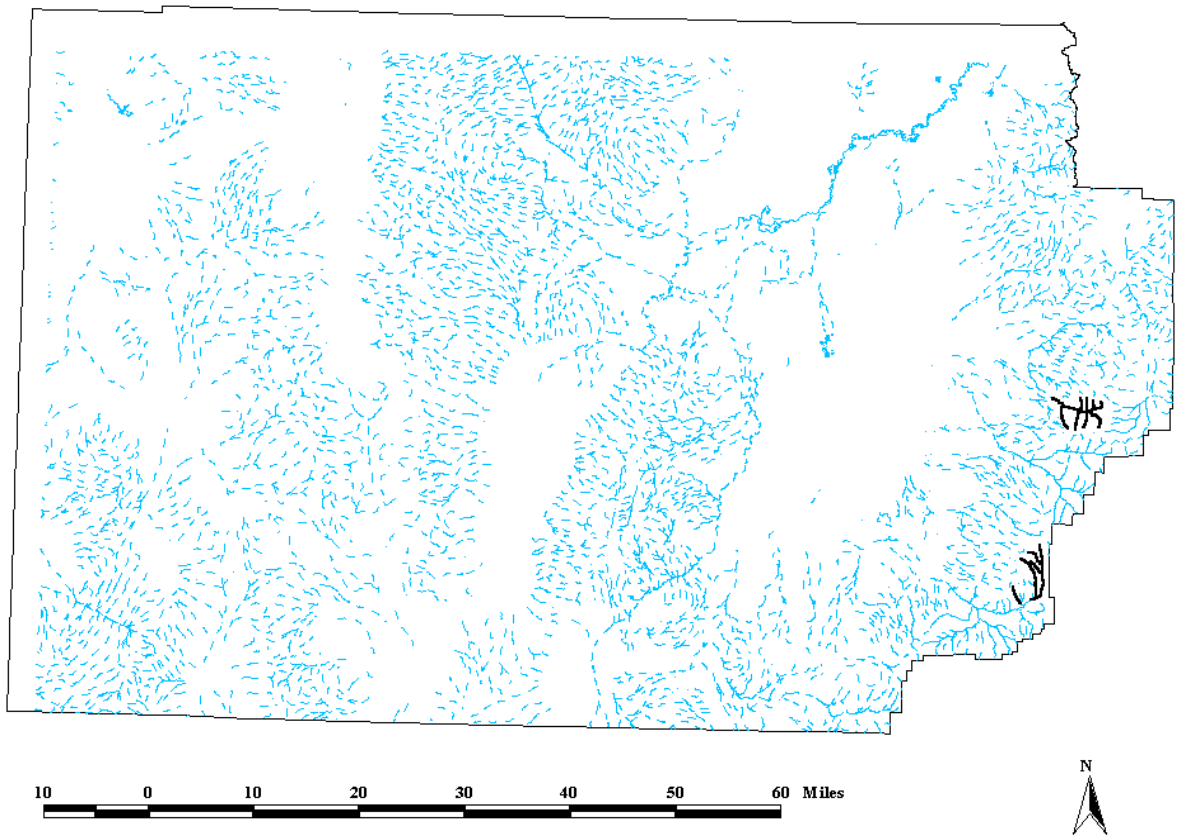


Figure 6. Map of permanent and intermittent drainages of Piute County, UT showing those drainages (highlighted) proposed to receive beaver transplants under *A Proposal for the Transplant and Reestablishment of Beavers into Selected Locations in Utah Division of Wildlife Resources' Southern Region*.

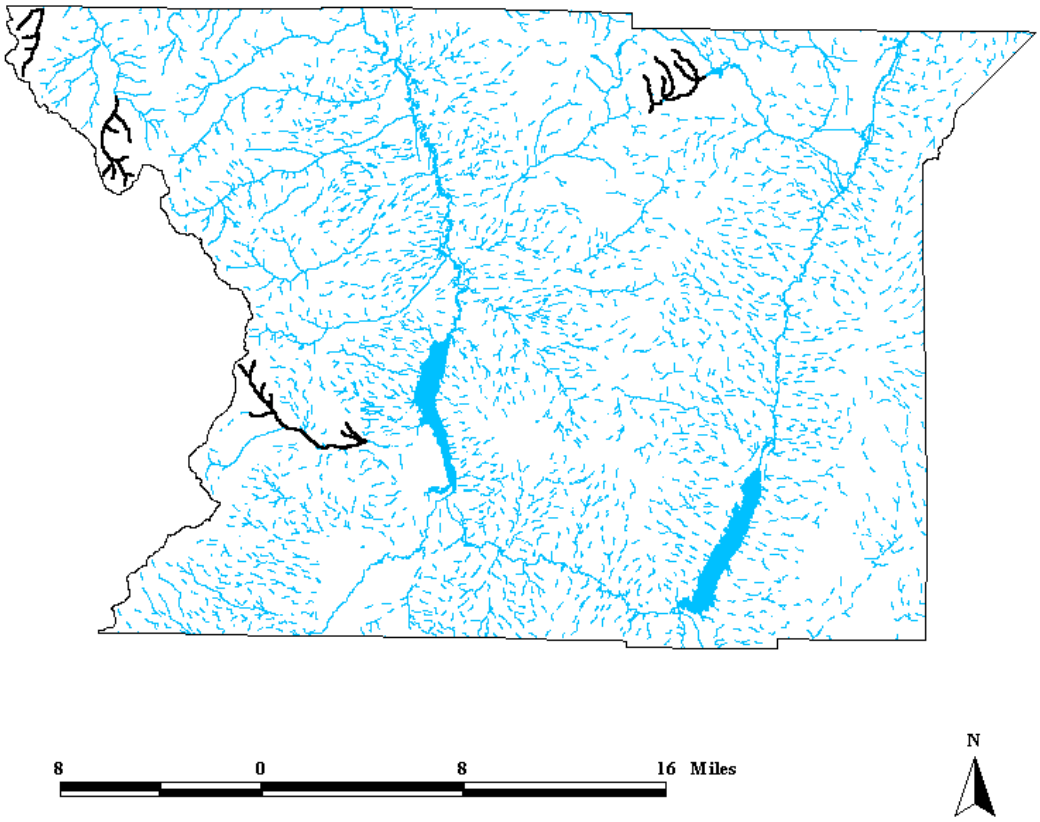


Figure 7. Map of permanent and intermittent drainages of Sevier County, UT showing those drainages (highlighted) proposed to receive beaver transplants under *A Proposal for the Transplant and Reestablishment of Beavers into Selected Locations in Utah Division of Wildlife Resources' Southern Region.*

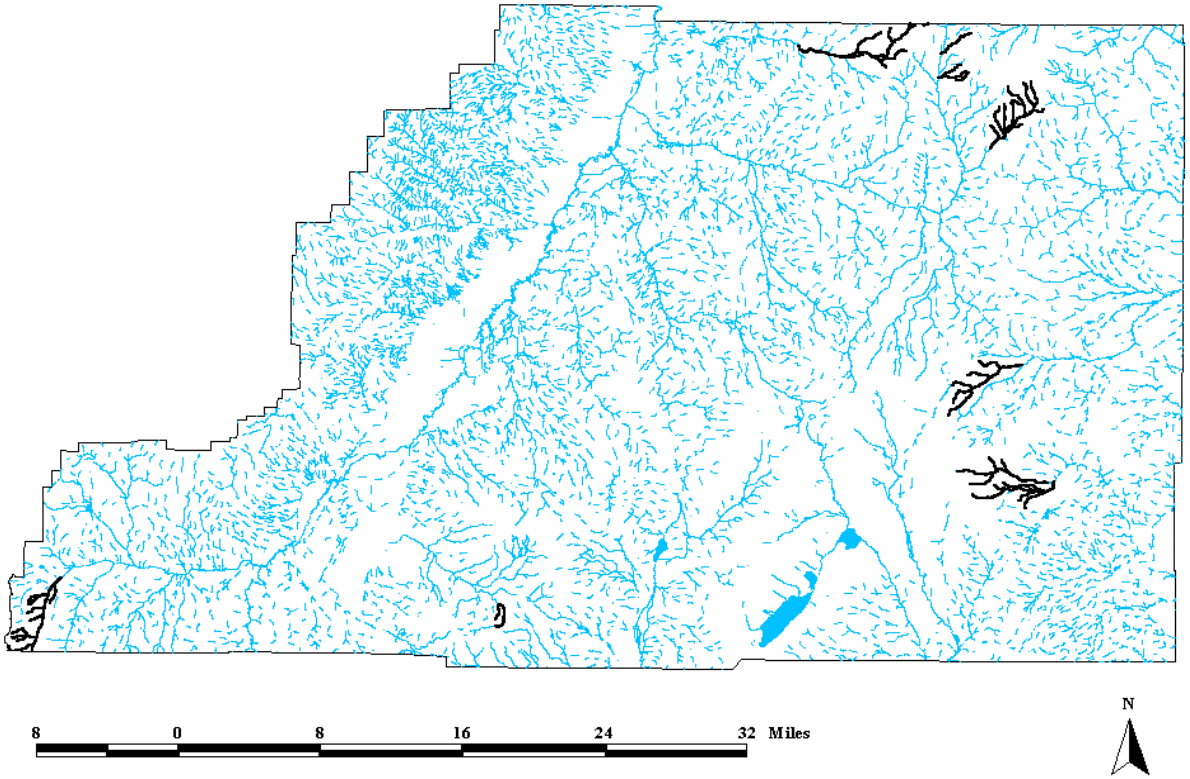


Figure 8. Map of permanent and intermittent drainages of Washington County, UT showing those drainages (highlighted) proposed to receive beaver transplants under *A Proposal for the Transplant and Reestablishment of Beavers into Selected Locations in Utah Division of Wildlife Resources' Southern Region*.

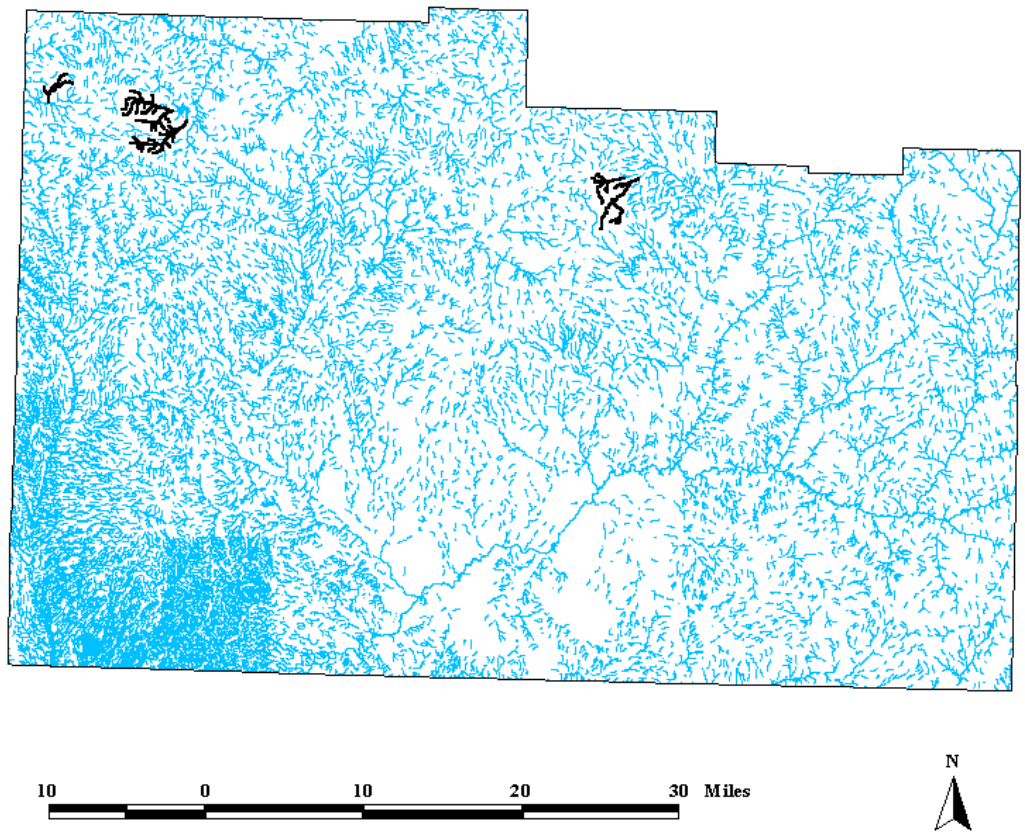
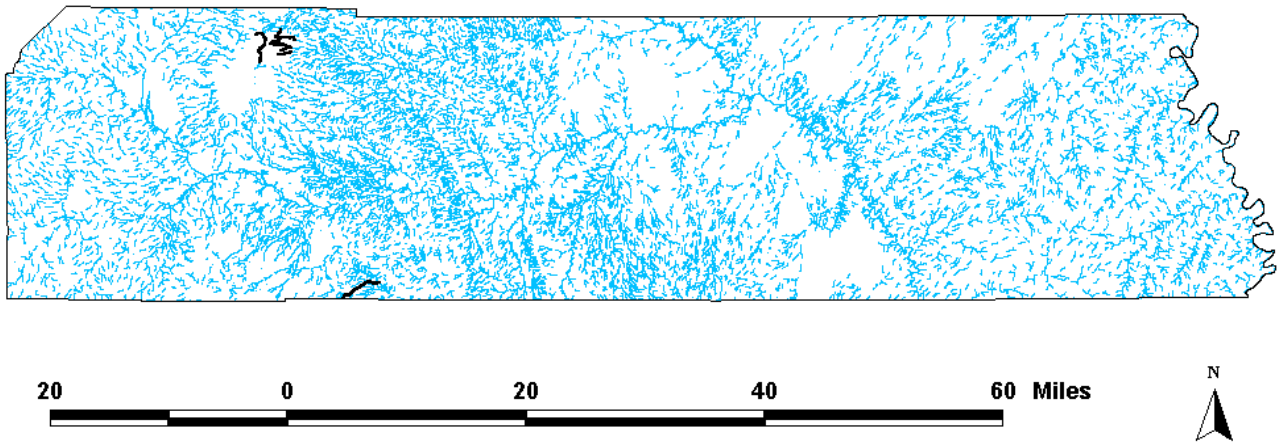


Figure 9. Map of permanent and intermittent drainages of Wayne County, UT showing those drainages (highlighted) proposed to receive beaver transplants under *A Proposal for the Transplant and Reestablishment of Beavers into Selected Locations in Utah Division of Wildlife Resources' Southern Region.*



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